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ABSTRACT

The macroeconomic trends shaping the United States economy and the effects of those trends on higher education are considered. Warning institutions of higher education about possible problems in the economy will place them in a better position to react if necessary. The economic environment is discussed in terms of productivity (goods and services consumed by households, those provided by governments, capital investment, and net export); the twin deficits (the trade and federal budget deficits); and the future (the best case scenario and alternatives to the best case). The effects on higher education include general economic strains at the federal and state levels as well as on institutions of higher education. Proactive policies and higher education are considered in terms of high technology and science, mid-level technology and industrial extension, foreign studies and modern languages, and the need for balance. Though there are few signs of immediate recession in the economy, there is still a need to reduce the federal deficit, bring down the trade deficit, and increase savings so the public and private infrastructure can be rebuilt. In this prospective environment, capital markets are especially volatile, and colleges should be cautious when borrowing. Endowment management will need special vigilance. Capital preservation will be the emerging standard for the 1990s. (SM)

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The Economy and Higher Education

by
Richard E. Anderson

According to some analysts the American economy is strong and the prospects for future growth are good. The most obvious and destructive problems, the budget and the trade deficits, have eased significantly. The federal budget shortfall is still high by historical standards but it is not out of line with the budget deficits experienced by our major trading partners in the late 1970's and early 1980's. And, although the United States' widely publicized trade deficit is a major concern, the weak dollar has begun to energize our manufacturing sector.

Alarmists, on the other hand, point to the *confluence* of the trade and budget short-falls and the long-term depressing effects of these deficits. They further observe that some of the reductions to the budget deficit are less significant than meet the eye and that a good part of the trade deficit is structural and will remain impervious to a weaker dollar. Finally, these pessimists point to the growing problem of unfunded pension liabilities and the general need to rebuild our infrastructure.

This issue of *Capital Ideas* will consider the macroeconomic trends which shape our economy and the effects of those trends on higher education. Although the projections of the middle-of-the-road analysts are more likely to occur—things generally have a way of working out—the storm clouds are real and close enough that they bear serious attention. If institutions are forewarned about these problems they will be in a better position to react should, or when, they need to.

In addition to our own work and our consultation with investment concerns and banks, we have commissioned a study on these issues by Michael Boskin. Dr. Boskin is an economist at Stanford University and with the National Bureau of Economic Research. This publication will be available early next fall. Much of the data for this issue were provided by the economics department of the Morgan Guaranty Trust Company. We are, of course, grateful to the personnel at Morgan Guaranty Trust but, as we try to interpret this very complex subject, any errors are our own.

The Economic Environment

PRODUCTIVITY

If the United States is to enjoy financial prosperity, it must be productive. The more goods and services produced, the more we can consume. The generally accepted gauge of the strength of our economy is the level and changes in the Gross National Product (GNP). GNP is a measure, albeit an imperfect one, of the total goods and services we produce. Among its four components are measures of **1.) goods and services consumed by households** and **2.) those provided by governments**. It also includes **3.) capital investment** in manufacturing facilities and equipment and in other private and public infrastructure like houses, roads, airports, and offices. All this fixed investment is necessary for the country and the economy to continue to grow. In addition, the GNP gauges **4.) net export** of goods and services. It is important to keep these four components in mind. An increase in the *consumption* of goods and services by households and governments translates into an immediately improved standard of living. Increases in the creation of public and private infrastructure creates capacity for future growth and future increases in our standard of living. The shipment of products and services abroad, results in the claims on the wealth of other nations, claims which can be redeemed for future consumption or to build productive capacity.

Over the last three decades GNP has grown at about 3 percent per year above inflation but this growth rate has been trending downward since the 1970's (See Chart 1.). There has been a spurt of growth in the last few years, but most experts discount these increases because they were induced by disproportionately high deficit spending. As a recent *Business Week* article observed: "...growth under Reagan was stimulated by deficits ...nothing more than Keynesianism on steroids."

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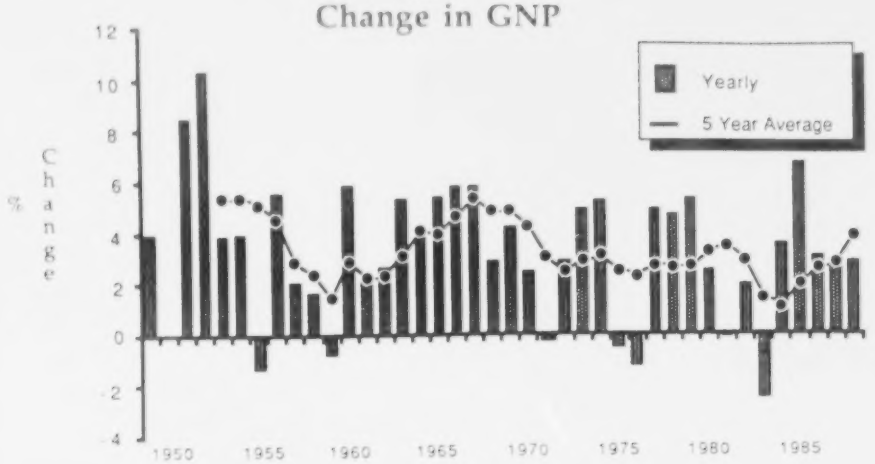
Chart 1

Change in GNP



As a recent *Business Week* article observed: "...growth under Reagan was stimulated by deficits... nothing more than Keynesianism on steroids."

An acknowledged problem with the GNP measure is that all goods and services are not counted. Economics texts are quick to point out that the work of housewives is excluded from the GNP (as is that of househusbands). Should a woman enter the workforce and hire domestic help, an event which is much more common today than in the past, the GNP would increase by the wages of both the wife and the domestic. If GNP is corrected for number of workers (See Chart 2.), the economic inertia of the last two decades is more obvious. Growth in GNP per worker has been practically non-existent since 1970. Again, only the deficit induced growth of the last few years breaks this trend.

Our lagging standard of living was a cause for concern in the late 1970's and helped propel Ronald Reagan into the White House and generate the supply-side experiment. Unfortunately, we did not work any harder during the last seven years. What has changed has been our spending pattern. We're no more productive but we're spending (i.e. consuming) as if we were. The most obvious transgressor is the federal government as it runs up huge federal deficits—unprecedented in a peacetime economy. Families are also borrowing more and saving less. Consumer debt, for example has grown from 9 percent of GNP in 1960 to 12 percent in 1984. Similarly, savings in the United States declined from about 7 percent of GNP in the 1970's to an all time low of about 3 percent last year. It has since rebounded to the 4 to 5 percent range but our national savings rate is among the lowest of the developed economies. Japan, a model for personal thrift, saves at a rate of about 12 to 16 percent. Savings in the Western European countries is in the 7 to 10 percent range.

We have also propped up our standard of living by importing more goods than we export. Trade *surpluses* soak up GNP, requiring families or governments to consume less. Trade *deficits* have the opposite result. Collectively, the United States has lived better by importing what we don't manufacture and borrowing or selling assets to finance this consumption.

Savings in the US declined from about 7 percent of GNP in the 1970's to about 4 to 5 percent today. Japan saves at a rate of about 12 to 16 percent. Savings in Western European countries is in the 7 to 10 percent range.

Chart 2

Change in GNP per Worker

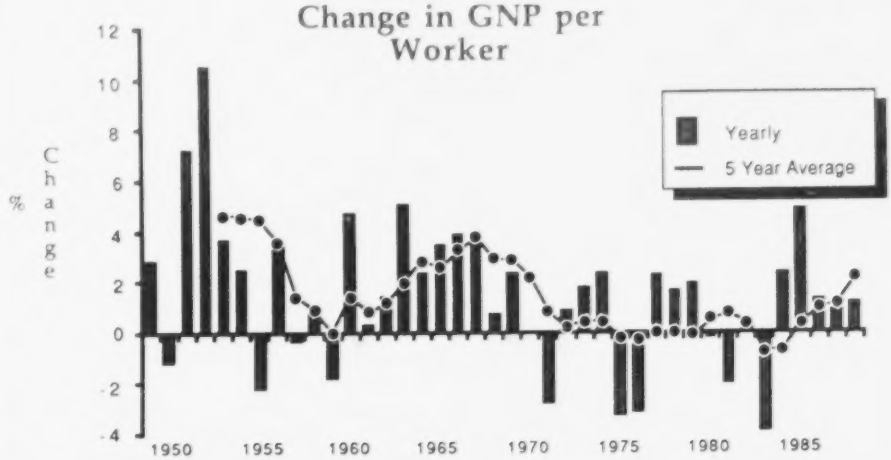
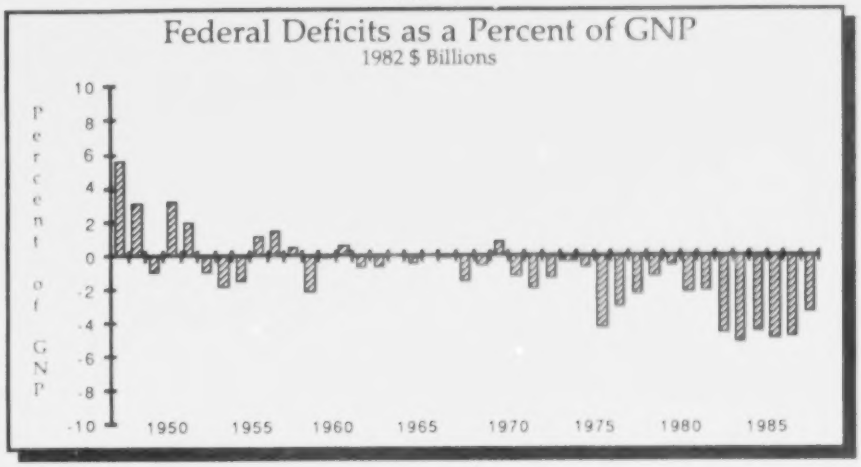


Chart 3



THE "TWIN DEFICITS"

Both the trade and the federal budget deficits have received a good deal of attention in the popular press recently—concern that is very well deserved. Still, it is important to understand the magnitude of these deficits and the problems they create.

Some believe that the only proper status of the federal budget is balanced. This position is certainly too simple in a complex modern economy. It is expected that a government will spend more than it takes in during a war or other national emergency. Moreover, governments can reasonably use their spending authority to stimulate the economy during an economic slowdown. Ideally budget deficits which spur the economy would be matched with budget surpluses created when the economy is strong. As Chart 3 shows, however, budget surpluses have been rare since 1960. Of greater concern is the uniformity and the magnitude of the budget deficits in recent years. Prior to 1980, the budget deficits, measured as a percent of GNP, swung from small positive balances to negative balances in the 2 to 3 percent range. (During many of these years we were financing the Vietnam conflict.) Only in 1975 did the deficit exceed 4 percent of GNP. Since 1982 the deficits have consistently exceeded 4 percent. In most of these years, the GNP has been growing so they cannot be characterized as stimulative deficits. The budget imbalance declined to just above 3 percent in 1987, but many economists are skeptical of this progress. They claim that some of the deficit reduction was achieved by selling assets and by the inclusion of Social Security surpluses in the deficit calculation, surpluses which we will need in the future as the elderly population grows.

Apologists for the deficits observe that Germany and Japan have run large negative imbalances in government spending for equally long periods of time. One difference is that, while their deficits also occurred during periods of economic expansion, they were more than offset by large trade surpluses. Their deficits, in effect, helped to build productive capacity. The opposite is true in the United States in the 1980's. Chart 4 shows that

Collectively, the United States has lived better by importing what we don't manufacture and borrowing or selling assets to finance this consumption.

Chart 4

As a result of a total debt which is projected to be about a trillion dollars, interest, dividends, and rent, paid to foreigners could exceed several percent of the GNP in the 1990's.

If a country pays real interest at a rate which exceeds real growth, then the burden of debt grows ever larger.

since 1982 we have also had consistent, and extraordinarily high, trade deficits. *In effect, our budget deficits have been financing consumption not industrial build up.* During the last two decades American companies have shifted manufacturing capacity overseas. More and more U.S production consists of assembling foreign-made components. This hollowing of our industry will take an equally long period to reverse and will slow any efforts to correct the trade imbalance.

Chart 5 offers a composite graph of our profligate behavior, displaying the sum of the two deficits as a percent of GNP. Until the late 1960's the trade and budget figures generally balanced each other. Under the economic strain of the Vietnam conflict, the total of the two deficits turned negative but was never more than 4 percent of GNP. Since 1983, both figures have been in the red and the sum is destructively high. The deficits have been financed partly by selling our assets but primarily by borrowing from foreigners. Consequently, real interest rates have been pushed to unusually high levels with wealth hemorrhaging from this country. The exact effects of these large deficits are unknown, but one thing is certain: deficits of this magnitude will not continue into the indefinite future. Moreover, any delay in correcting the imbalances will exacerbate the problems. These problems can be classified as financial and structural.

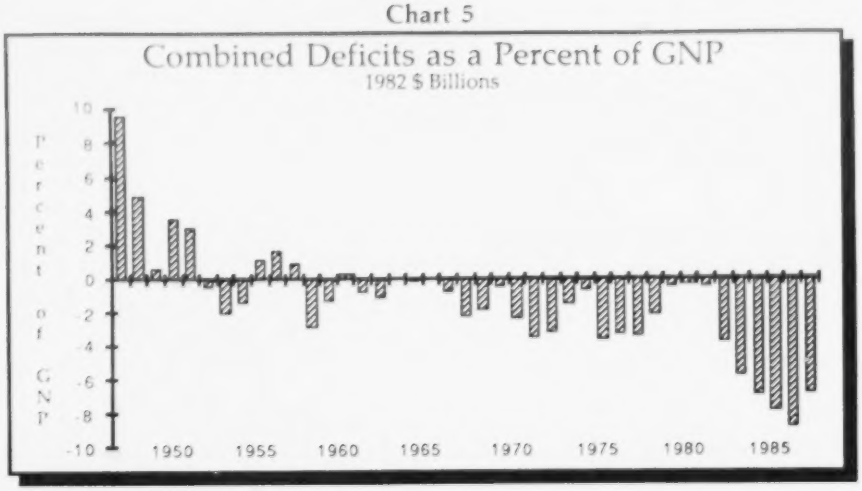
Financial Problems. The debt created by these deficits is the most obvious problem. In 1982 we were the world's largest creditor nation. Now we are the largest debtor nation, with net debt in excess of $600 billion. Moreover, it is impossible to turn these deficits around overnight. Most economists assert that if we sacrifice consumption and if we raise taxes, we can bring the deficits down to a manageable level. But to accomplish this in an orderly fashion without generating a recession, net debt will need to rise for some time, reaching a peak of perhaps a $1 trillion dollars. As a result interest, dividends, and rent paid to foreigners could exceed several percent of GNP in the 1990's.

Another financial problem created by these deficits is that real interest rates (interest adjusted for inflation) must be high enough to attract a sufficient number of purchasers of our debt. Historically, the rates paid on long-term Treasury debt have been about 1 percent above inflation. During most of the 1980's the real return to Treasury Bonds has been 4 to 5 percent above inflation. The recent record deficits and the need to fund them are one of the major reasons for these abnormally high interest costs—costs which are shared by all who wish to borrow, including colleges and universities. Unfortunately this problem can compound itself. If a country pays real interest at a rate which exceeds real growth, then the burden of debt grows ever larger.

A third financial consequence is that the value of the U.S. dollar is likely to remain depressed and perhaps fall further. Although the price at which foreign investors are willing to hold U.S. dollars is very complicated, the productivity and the expected productivity of the economy are major factors. To the extent that we drain our productive capacity with high debt to foreigners, the value of the dollar will remain depressed. One consequence of a weak dollar is that domestic purchasing power will be further reduced. Foreign goods make up about 15 percent of the goods consumed in this country. If foreign goods rise 50 percent in price and consumption of foreign goods remains level (it won't but it has been surprisingly inelastic so far), families suffer a 7.5 percent decline in purchasing power.

Structural Problems. During most of the 1980's, the U.S. economy grew at a satisfactory rate. The foundation of that growth, however, was consumption and not the creation of plant and equipment. Families and governments were spending at higher and higher levels and financing their purchases with debt. As a consequence the United States devoted fewer resources to plant and equipment. Entire industries developed off shore for which there is no domestic equivalent.

Chart 5



(e.g. consumer electronics). The lead in many other industries has shifted abroad (e.g. micro chips). In an effort to keep the prices of their goods as low as possible, many U.S. companies either moved production facilities abroad or imported major components for their products. A weaker dollar will tend to reverse this trend but it will take time to rebuild productive capacity.

Most experts believe that a turn around in trade is going to have to be led by manufacturing. It is a myth, according to these analysts, that we can prosper as a nation with a "service economy." One reason is that service which is exportable *and* which is not inextricably tied to production is of too little consequence. Moreover, there is no reason to expect that this country can maintain a structural advantage in the production of services. The opposite, in fact, is likely to be true as many services in financial, legal, and other fields can be culture specific.

The weak dollar lowers the price to foreigners not only of U.S. manufactured goods but of U.S. manufacturing *facilities*. As treasury debt matures some foreign creditors are deciding not to repurchase debt but to buy U.S. companies instead. Stephen Roach, a Solomon Bros. economist, estimates that foreigners already own 10 percent of U.S. manufacturing facilities and this percentage is growing very rapidly. The profits of these companies will flow into foreign bank accounts with further depressing effects on our standard of living.

THE FUTURE

Best Case Scenario. Projections about the strength of our economy vary widely but recall that growth in GNP per worker has been virtually level since the 1970's. Therefore, barring a resurgence in productivity which violently breaks this pattern, a best-case scenario is for modest growth and the avoidance of a severe economic downturn. But this best-case scenario is not necessarily a rosy one. The basic foundation for this projected growth is that a weak dollar will make American made goods cheap on the world markets and revitalize our manufacturing sector—a structural change which is going to require significant investment in plant and equipment and, consequently, diminished domestic consumption. The plan also calls for our major trading partners to reduce their exports and absorb ours. If our trading partners don't consume more, the world marketplace will be glutted with goods and a world-wide recession (some whisper depression) could occur.

Furthermore, this plan calls for some improbable changes in the domestic economy. We still need to service the mountain of debt that has accumulated as we shift from consumption to investment. The prospects for an improved standard of living under this optimistic forecast, therefore, are not at all bright. Debt payments, exports, and investment in plant and equipment will consume a larger share of economic output. Meanwhile, the weak dollar which is necessary to fuel manufactured exports will make foreign imports more expensive. Former Commerce Secretary, Peter Peterson, estimates that to finance our debts and to simultaneously create the necessary productive capacity consumption must *decline* by about $165 per worker per year over the next decade. To put this in perspective, consumption per worker *rose* by about $200 per year in the 1970's—a period many considered austere. It is far from clear that we can generate the political will in this country to make these necessary adjustments. A recent *U.S. News and World Report* editorial observed that no presidential candidate is daring to mention the big S word, sacrifice. George Bush, for example, has flatly declared he will not raise taxes, and Michael Dukakis, the Democratic front-runner, is campaigning on the promise of the Massachusetts miracle made national.

Alternative to the Best-Case. If, as discussed above, each country tries to maintain its previous share of international commerce, a destructive trade war could result. The oversupply of goods will slow economic activity around the globe bringing a worldwide recession. The domestic effect of our sharing in this recession would be a decline in personal income and tax revenues. The federal deficit would be likely to grow making the debt payments even more onerous.

Other observers, focusing on third world debt, proffer that even a mild cyclical recession could cause less developed countries to repudiate their debts which are already extremely burdensome as accounts from Latin America make clear. Alfred Malabre, a news editor of *The Wall Street Journal*, argues that the potential for an international debt crisis is very real and far more serious than in the 1930's. Reasons include the greater volume of debt, higher levels of international trade, and the commercial interdependence of economies. In addition, thirdworld nations are more *politically* independent today. Earlier in the century many of these nations were supported by a more stable colonial empire. The speed with which a crisis could develop is amplified by advances in transportation and communication. Finally, and perhaps most distressing, in earlier decades the leading economies (Britain, and then the United States) were relatively strong creditor nations. Today, in spite of its problems, the United States economy is still the most influential but is also the world's largest debtor. This debt greatly restricts policy options should a crisis occur. C. Fred Bergsten, director of the Institute for International Economics estimates that in 1989 the ratio of our foreign debt to exports could exceed 200 percent—a point at which many less developed economies have found debt too burdensome to service.

Another possible outcome, and not necessarily mutually exclusive of a recession, is double-digit inflation. Inflation diminishes the pain of debt as it allows the debtor to repay with a less valuable

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currency. The German inflation after World War I helped get that nation out from under war reparations but at a severe cost in productivity and social order. Inflation might be initated in this country, for example, if the Federal Reserve expands the money supply in an effort to rescue failing financial institutions. (Just last October, the Fed promised all the money necessary to keep the stock market liquid.) Moreover, some observers believe that there is more bad debt in this country than is publicly acknowledged. An assertion that is bolstered by the farm credit and the Texas bank crises.

Policy options are very slim with one possible, and dangerous, exception. The Social Security system will be generating large surpluses in the coming years as the baby boomers reach peak earning capacity. Although these surpluses are essential to finance the retirement of these same workers, the funds could provide some financial breathing room by reducing our dependence on foreign lenders. However, these funds also pose an almost irresistible temptation to politicians to postpone problems in the 1990's and, in the process, pass on calamity to the next century.

The policies of the last few decades, which encouraged consumption and discouraged savings, have created a situation with many problems and few policy options. Concern about economic well-being will dominate, even more than it does today, public and private decision making in the 1990's. These financial pressures will create problems and opportunities for colleges and universities with which they must be prepared to deal.

Effects on Higher Education

Concern about economic well-being will dominate, even more than it does today, public and private decision making in the 1990's. These financial pressures will create problems and opportunities for colleges and universities with which they must be prepared to deal.

Perhaps in no time in recent economic memory has there been such focused concern on the United States economy. Headlines blare out "America, Wake Up!", "A Troubled Economy", and "Are We a Second Rate Economy?" Hyperbole, of course, helps to sell magazines and papers. There is, however, a growing consensus that we will have to get our national finances in order. The effects on higher education of this reordering of the economy will depend to a large extent upon whether it is seen as part of the problem or part of the solution. Put another way, does higher education represent consumption or investment. The glib response is that expenditures on higher education are an investment—an investment in human capital. This may be true but the United States invests more in higher education than any other country and proportionately more than our major trading partners (3 percent of GNP compared to 1.7 percent in Japan, .7 percent in Germany, and .8 percent in France). In spite of these relatively high educational expenditures, our economy has grown at a far slower rate than most others in the industrial world. Moreover, even if higher education is part of the solution, that will not insulate it from demands for efficiency, i.e. doing the same for less, as family and public budgets are strained.

This discussion is divided into two parts. The first considers the effects of the protracted economic strains on colleges and universities. The second looks at likely roles for higher education in resolving America's competitiveness problems.

GENERAL ECONOMIC STRAINS

In the first part of this issue it was argued that the coming decade is likely to be a financially spare one. As we repay our debts, build productive capacity, export more goods, and as consumers pay a higher price for imports, the level of resources remaining to pay governmental and family expenses will be limited. This prospective austerity will affect all institutions including higher education.

Effects at the Federal Level. As a consequence of these economic necessities, the outcome of the 1988 presidential race will have only a marginal impact on the resources available for higher education from the federal government. All new program initiatives and the refinancing of existing programs will bump up squarely against the financial constraints caused by the deficit. Similarly, favorable tax treatment of higher education will be weighed against the government's need for new revenues without breaking campaign promises to hold the line on taxes. This pressure is already evident as colleges and universities are finding it increasingly necessary to defend the tax exempt status of endowments and parts of auxiliary enterprises. It is important, therefore, that higher education work collectively to maintain the advantages they now have. More important, all institutions must avoid abuses of their tax status which could trigger either a legislative or regulatory assault. New tax incentives to support higher education are extremely unlikely. One possible exception is that there may be an opportunity for tax advantaged savings which demonstrably increases family capital accumulation—but the savings would have to be clearly new and not displaced from other sources. The reason that special consideration might be given to savings incentives is that additional capital is needed to finance public and private infrastructure.

Inflation, should it reoccur, would put a special strain on the student aid budget which has been under attack for years. Between 1980-81 and 1985-86 federally supported student aid declined about 10 percent after adjusting for inflation. Virtually all of the cuts were sustained by the Social Security educational benefits and by veterans benefits. Pell grants, on the other hand, increased

24 percent. Part of the relief for general student aid was achieved because of lower nominal interest rates (real interest charges remain high but inflation dropped from 15 to 4 percent). Consequently the special allowance interest payment to lenders declined from 52 percent of GSL costs in 1982 to 7 percent in 1987 (Source: College Board). Should double-digit inflation return interest costs will rise dramatically and the entire federal student aid budget is likely to be distressed.

A recession, of course, would expand the deficit as revenues decline and transfer payments increase. This clearly exacerbates all problems discussed above. Until the federal budget is in closer balance new broad based assistance for higher education is unlikely. Specially focused programs which have the potential to directly improve American economic competitiveness will undoubtedly be enacted and will be discussed later in the issue.

Effects at the State Level. The income and spending constraints of state governments will be similar to those at the federal level. Fortunately, states do not have the backlog of deficits that the federal government does. On the other hand, Steven Gold, director of fiscal studies for the National Conference of State Legislators, points out that state year-end general fund balances are precariously low. In the last ten years, only 1983, a year at the tail end of a recession, showed lower year-end reserves. (See Chart 6.) As a consequence, state budget options will be stretched by a laggard economy. A recession could cause a wave of state crises.

Although there are clear limits to states' abilities to finance education, including higher education, it has become a major policy issue. The reasons for increased state-level attention to education are complex and spring from a variety of public and private motivations. But clearly, desire to reinvigorate state economies is among the most prevalent causes. Linked to this is the concern that, although education is an important policy tool, the public is not getting its money's worth. Legislators and governors are demanding evidence of educational achievement—accountability. If accountability is a manifestation of economic pressures, as we believe it is, the 1990's are unlikely to provide any relief to educational administrators. The opposite, in fact, should be expected. If economic strains grow—that is, if family incomes remain stagnant—the arguments may broaden from concerns about program and campus efficiency to basic questions about 1.) sector roles (Should higher education be providing remedial instruction?), 2.) access (How much higher education can we afford?) and 3.) production process (How important is tenure?). It is ominous that in Britain, a country whose economic weakness preceded ours, faculty tenure is being seriously questioned at the highest levels of government.

Effects on Institutions. Although financial stresses will effect public and independent institutions differentially, the general effects will be similar. Slow to no growth in family incomes will have a depressing effect on enrollments and, more specifically, on tuition income. A recession, however, could cause enrollments to spurt at public institutions. A weak dollar will reduce the cost of higher education to foreigners. Inflation will raise costs and high real interest rates. Finally, capital market volatility will generally increase the cost of financing and make investing more hazardous. In this environment independent colleges may be at special risk.

To paraphrase Mark Twain's famous telegram, past report sabout the impending demise of private higher education have been greatly exaggerated. It is possible, however, that these earlier concerns were well grounded and that only unanticipated intervention and events averted serious

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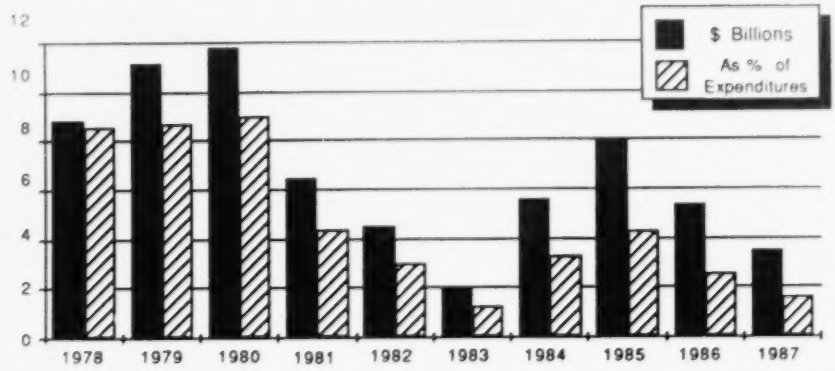
Chart 6
State General Fund Year-End Balances,
Fiscal Years 1978 to 1987



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Our anemic savings rate and the growing number of two income families are worrisome trends for private higher education. The typical family in the coming decade will have banked neither sufficient cash nor a reserve worker (i.e. an educated housewife) for paying pricey tuition bills.

The sharp decline in the dollar directly reduces the cost of American goods to foreigners... Colleges that have strong programs for recruiting, assimilating, and educating foreign students should benefit immediately.

troubles. The rapid growth of federal student aid in the 1970's, for example, was one such fortuitous intervention. Federal student aid adjusted for inflation doubled between 1970 and 1980. In addition, private higher education has undoubtedly benefited from the general, even if ill-founded, economic confidence in the 1980's. Some set of parents (the exact proportion is unknown) may have been willing to financially extend themselves to finance expensive private education because the economy seemed strong, the market value of their home provided a sense of wealth, or because the wife was able to find a job and maintain the family's life style. More generally, the 1980's was not a decade for American self-denial. If this attitude turns, and we are arguing that this change is inevitable, families will review expenditures, including those for higher education, much more carefully. Some real estate markets have already begun to decline and a number of economists assert that a recession is overdue. Should economic problems become especially severe, the long heralded crisis in private higher education may arrive.

Perversely, a recession will magnify state financial problems but, as prior recessions have shown, an economic downturn is likely to result in increased demand for higher education as more young high school graduates cannot find a place in the workforce. This increased demand will, of course, be concentrated at the less expensive public institutions. In such an environment, public colleges may be asked to deliver more with less funding.

Any realistic projection of economic progress suggests that we will continue to need foreign capital for some time. As a consequence the dollar is predicted to stay depressed and real interest rates high. As noted earlier, the weak dollar will raise the cost of imports and reduce the purchasing power of domestic incomes. On the positive side, the sharp decline in the dollar should directly reduce the cost of American goods to foreigners. As it turns out, this generally hasn't occurred as manufacturers, wholesalers, shippers, and retailers all try to add on additional profit margins. But foreigners purchase higher education directly and these premiums are unlikely to appear in their tuition charges—with the possible exception that state legislators may become restive about educating foreign competitors with public funds (this already happened in Massachusetts). Colleges that have strong programs for recruiting, assimilating, and educating foreign students should benefit immediately from the decline in the dollar.

Inflation, some analysts argue, is the only politically acceptable escape from our enormous public and private debt burdens. Double-digit inflation, *should it reoccur*, may affect institutions of higher education with special severity as it did in the 1970's. The generally accepted reasoning is that service industries, including higher education, are labor intensive. That is, their production process requires proportionately more labor than capital and, this conventional wisdom continues, it is inherently difficult to substitute capital (i.e. machines) for labor in service industries. Manufacturers, on the other hand, can tilt the production processes toward capital intensive machinery. Partially as a consequence of this shifting, the price of manufactured goods did not rise as rapidly as wages in the 1970's. Clearly there is some truth to this notion but higher education would serve itself poorly by hiding behind such a shibboleth. Phone companies are in a service business, moreover one which is also engaged in information transmission, yet the real costs of telephone calls today are a fraction of what they were a few decades ago; this efficiency is a direct result of the effective use of technology. Higher education's apparent inability to use technology to reduce costs may have more to do with faculty values and the primacy of faculty governance than higher education's immutable production process. Institutions that can successfully adapt technology will be better suited to survive in an economy with limited growth and soaring prices. The coming decades are likely to require that colleges and universities devote some considerable attention to improving efficiency. Secretary Bennett's exhortations, while cranky in tone, reflect a broadly based concern and they are premonitory not a divergent opinion.

An inflationary environment, coupled with this country's continuing need to attract foreign capital, will obviously push up interest rates. High real interest rates will encourage parental savings but will raise the cost of borrowing to states, institutions, and families. Parents and students, once inflation has set in, will find debt a costly way to finance education. (During the process of inflation acceleration, debt burdens diminish.) Similarly, institutions that need to borrow to replace and renew plant and equipment, will also find debt more burdensome.

In this prospective environment, capital markets are especially volatile—i.e. recessions drag down nominal interest rates and inflation pushes them up. Colleges should be especially cautious when borrowing; interest rate caps on variable rate debt may be well worth the added cost. Volatile capital markets also demand special vigilance for the management of endowment and a more conservative approach to investment strategies should be considered. The emerging standard for the 1990's is likely to be capital preservation.

Proactive Policies and Higher Education

William Baumol, a Princeton economist, observes that lagging productivity doesn't keep a nation from competing. Rather, it forces the country to compete in different ways—primarily through lower relative wages. In comparison to our major trading partners, wages in the United States have been declining for about two decades. Because of economic forces reviewed in this paper, this trend may be irreversible for some time. In fact, wages may decline absolutely. Obviously, politicians and policy makers will not observe this trend passively. There will be positive, proactive responses. We have already suggested there will be increased scrutiny of public budgets. Efforts to improve the effectiveness of all public expenditures will be redoubled. Furthermore, budgets will be reorganized to target resources on areas which will have an immediate positive impact on our local, state, and national economies. All of this is, of course, already occurring. The present analysis suggests that the trend is likely to continue.

HIGH TECHNOLOGY AND SCIENCE

At the postsecondary level, funding of science and technology will continue, as will government efforts to galvanize corporate-university partnerships. So far, most of the policy responses have been at the state level. Developmental corporations are being formed to smooth technology transfer from university laboratories to commercial production. In addition, states are encouraging, and sometimes financing, the development of research parks near universities. While anecdotal evidence suggests that these efforts can be successful, systematic reviews are just getting underway. (Researchers at the University of North Carolina are working with the Forum in evaluating some of these cooperative efforts.)

The federal government, relying primarily on macro-economic policy, has lagged behind the states in developing these more micro activities. One notable exception is Sematech, a federally funded project at the University of Texas at Austin. This venture will bring together researchers from the university and from the leading semiconductor producers in the United States. The goal of Sematech is to re-establish our lead in the production of state-of-the-art semiconductor chips. If Sematech is successful, and if the state ventures prove successful, more funds and energy will follow.

These initiatives are, of course, welcome. They probably cannot be halted. But higher education should be cautious. As Thomas Jefferson warned the nation against entangling alliances, these relationships are potentially constraining, even repressive. The University of Rochester stumbled when it briefly caved in to pressure from its benefactor, Eastman Kodak, and withdrew the acceptance of an applicant employed by Fuji Corporation. In this era of trade vulnerability, it is not difficult to imagine restrictions on foreign graduate students working in labs funded with federal money. Moreover, there will be a multitude of lively contests in the general arena of intellectual property rights as public funding authorities, corporations, universities, and faculty vie with one another for a fair share of generated gains.

MID-LEVEL TECHNOLOGY AND INDUSTRIAL EXTENSION

Scientific progress is obviously important to mankind in many ways including economically. But national success at the scientific frontier does not necessarily translate into national economic success. High technology breakthroughs are expensive to achieve and difficult, as well as undesirable, to protect with patents. The success of America's trading partners was not built on expanding the frontiers of science but on adapting science to products and to the production processes.

As we maintain our strength in basic science we must also ensure that technological innovations find their way into the industrial process—this, of course, is the technology transfer issue that has stimulated incubator programs, university-business cooperation, and science parks. There is, however, a more prosaic technology transfer that must occur. The transfer of mid-range technology to the design, manufacture, and distribution of goods. Certainly this is happening, but not on the scale necessary. Moreover, too much of the innovation is limited to large well capitalized corporations and

The federal government, relying primarily on macro-economic policy, has lagged behind the states in developing micro-economic approaches to industrial development.

Name Change

The Forum for College Financing has taken a new name. We have dropped the term "Alternatives" from our previous title. We will still concentrate on capital finance and, particularly, on new approaches. However, as the occasion arises we will embrace more general topics like the subject of this issue, "The Economy and Higher Education."

The Forum continues as a project of the National Center for Postsecondary Education and Finance which is supported by the Department of Education's Office of Educational Research and Improvement.

Industrial extension, an analog to agricultural extension, has already been suggested. The idea needs to be further refined and expanded. As an alternative to science parks, states could create high technology *production* parks which invite companies involved in certain types of production to take up tenancy.

As higher education moves closer to industry there are many academic and economic problems to be resolved. These range from faculty compensation to site selection to efficient public subsidies. We can find answers to these problems and we must if we are going to effectively involve higher education in national and local economic resurgence.

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within certain sectors. Higher education can play an important role in bringing technological innovations to companies of all sizes an in all sectors of manufacturing.

Industrial extension, an analog to agricultural extension, has already been suggested and is being tried at some large public universities. The idea needs to be further refined and expanded. For example, university-based R&D parks are typically built on high technology cores; the concept is that a concentration of scientists will form a synergy resulting in new ideas and new products. Their focus is on science and scientific products. Generally covenants for these parks significantly restrict the type and amount of manufacturing in which tenants may engage.

An alternative to science parks, states could create high technology *production* parks which invite companies involved in certain types of production to take up tenancy. The parks could be built near a university and some part of the lease payments would support process development laboratories. The state might match these funds. In addition to the university's role, community colleges could be enlisted to train students in the repair and service of associated equipment.

Some years ago I was employed as a production engineer with General Electric. One plant at which I worked was developing a new process for manufacturing industrial capacitors. The developmental work was being done in a remote part of the facility with the engineers being both socially and physically isolated. For most of us, our work day centered on production schedules, labor relations, cost containment, and similar concerns. The development engineers had no colleagues. A production park which had, for example, a commitment to metal shaping and joining could help to create the same synergy in production that we're trying to build in science. This type of corporate-higher education partnership doesn't have the glamor of recombinant genetic research or of super-conductivity, but it may have more immediate economic impact. Moreover, it probably provides a better fit with regional universities and certainly with area community colleges.

As higher education moves closer to industry there are many academic and economic problems to be resolved. These range from faculty compensation to site selection to efficient public subsidies. We can find answers to these problems and we must if we are going to effectively involve higher education in national and local economic resurgence.

FOREIGN STUDIES AND MODERN LANGUAGES

One area of the liberal arts which is likely to prosper will be foreign studies and modern languages. For decades this country has charted its own scientific and economic course and the rest of the world has followed. As our technological and commercial hegemony wanes, traffic on these streets will increasingly flow in two directions. A number of the trade problems with Japan, for example, are attributed to cultural misunderstandings. There will be more demand for people who can communicate with and understand the cultures of our global partners—not just the major trading nations but lesser developed countries where we will compete to successfully place manufacturing facilities. Similarly, we can no longer assume that all major technological innovations will be immediately published in English and demand for translators is likely to grow. Institutions that maintain effective foreign studies and language programs should benefit directly.

NEED FOR BALANCE

In this scenario of increasing attention to economic success, the tensions between the liberal arts and the science and other more directly commercial fields of study can only increase. As the goals of families and legislators bend even more toward preserving and improving their personal and public economies, college administrators and trustees will need to be watchful that an appropriate balance is maintained. In addition, they must avoid short-term answers to long-term problems. Broadly educated, self-reflective, articulate graduates will be more valuable to the nation, economically and otherwise, than narrowly trained technicians.

Related to the question of balance of institutional mission is the danger that colleges and universities will promise more than they can truly deliver. In the 1960's and 1970's higher education was enlisted in the war on poverty. In fact, we were more than passive conscripts; we welcomed public funds and became active partners in promising an excellent education and upward socioeconomic mobility to all who would spend four years. Subsequently we found public, especially federal, support to be inherently unstable bringing attendant financial problems to our institutions. Real troubles, however, resulted from our inability to deliver on our promises. Simply stated we failed to deliver upward socioeconomic mobility on the scale promised and enrollments and public support waned. In retrospect the failure was inevitable. There wasn't enough room in the upper socioeconomic strata for the 60 percent of the age cohort who enrolled in our institutions.

The parallel concern today is that we may reorient our institutions to deliver economic growth that will halt the Japanese juggernaut. Having restructured our institutions, we could find that the ascendance of our trading partners is not easily reversed or that we were fighting the wrong battle. Public policy, and funding, may turn elsewhere and leave colleges with the fixed costs of laboratories and business schools and a faculty too narrowly trained in the hard sciences and commerce.

Summary

The real gross national product grew at an impressive 3.9 percent in the first quarter of 1988 and, as of this writing, there are few signs of an immediate recession and the prospects for inflation are not clear. Unemployment is low and consumer spending is up. But these current successes do not eliminate the pressing need to reduce the federal deficit, bring down the trade deficit, and increase savings so that we can rebuild public and private infrastructure. The longer we wait, the more disruptive the reckoning.

Gross national product has four components: family consumption, government spending, capital investment, and net export of goods and services. As net exports rise, other components of the GNP must decline proportionately. To continue to raise exports, the United States must increase investment in plant and equipment further diminishing the share going to family consumption and government spending. Moreover, much of government spending is unavoidable—ballooning debt payments being one inevitable expense. Unless this country's lackluster productivity is accelerated and sustained, the prospects for a significantly improved standard of living are not bright.

The United States' dependence on foreign capital will continue pushing interest rates upward and depressing the dollar. (A lower dollar will further diminish U.S. living standards.) We will, of course, learn to live within our means. But unless the transition to a more provident economy is coordinated with an increase in consumption by our trading partners, a major recession could occur. A recession, regardless of its cause, would exacerbate public and private budgetary problems. In addition, the threat of inflation remains as policy makers seek a politically acceptable escape from our debt problems.

Disruptions in capital markets could make debt financing,fund raising, and investment management more difficult. Although institutions will still try to achieve growth, attention to capital preservation will be important.

Voters will resist increased public spending as they try to minimize taxes and maintain personal living standards. Public funding for higher education will be most easily achieved when there are direct and measurable benefits—particularly economic ones. Similarly, personal incomes will be strained and family expenditures on higher education more closely examined. Our anemic savings rate and the growing number of two income families are additional worrisome trends for private higher education. The typical family in the coming decade will have banked neither sufficient cash nor a reserve worker (i.e. an educated housewife) for paying pricey tuition bills. Quality institutions will survive but glossy brochures and a distinguished past will be insufficient evidence of value.

While these econmic difficulties are daunting, there will be real opportunities for higher education. National and state leaders will look to education as an important, and one of their few, policy options. Parents will not give up the hope that their children will lead a better life and they will make sacrifices toward this end. Colleges and universities that rise to these challenges will prosper.

In this prospective environment, capital markets are especially volatile. Colleges should be especially cautious when borrowing and endowment management will require special vigilance. The emerging standard for the 1990's is likely to be capital preservation.

CAPITAL IDEAS

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